Socially responsible education for the consumption of plant-based foods in the city of Guayaquil within the framework of Sustainable Development Goal #12 of the United Nations 2030 Agenda

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Abstract

A documentary review was carried out on the production and publication of research papers related to the study of socially responsible education for the consumption of plant-based foods within the framework of the sustainable development goal set by the UN. The purpose of the bibliometric analysis proposed in this paper was to know the main characteristics of the volume of publications registered in the Scopus database during the period 2016-2021, achieving the identification of publications in total. The information provided by the said platform was organized by employing tables and figures categorizing the information by Year of Publication, affiliated institutions, Area of Knowledge and Type of Publication. Once these characteristics were described, the position of different authors on the proposed topic was referenced by employing a qualitative analysis. Among the main findings of this research, it is found that the Universidad San Francisco de Quito, with 10 publications, was the entity with the highest scientific production registered in the name of authors affiliated with these institutions in that country. The area of knowledge that made the greatest contribution to the construction of bibliographic material referring to the study of socially responsible education for the consumption of plant-based foods within the framework of the sustainable development objective proposed by the UN was Medicine with 31 published documents, and the type of publication that was most used during the period mentioned above was the journal article, which represents 82% of the total scientific production.

Keywords: responsible education, plant-based food, sustainable development

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1. Introduction

Food systems are those sets of actions that a country employs through projects that allow it to generate food stability, taking into account the opportunities for growth and its influence on social development. Latin American countries are characterized by having deficient food systems where the lack of healthy behaviors to lead a dignified life is evident, which is why actions are increasingly aimed at achieving sustainability in these processes, seeking independence of the human diet of food derivatives or animal origin, opting for alternatives that come from vegetables or foods much healthier for us as human beings and processes do not impact the environment as much as those used. In Ecuador, this change has been seen with May frequency in recent years where there has been a change in the routine patterns of people, and of course their buying patterns; nowadays people are much more concerned about knowing the origin of the food they are eating, being also very important to know the process through which they passed, being much more sought after products that during its production process acted with social responsibility, thinking about both the impact of this on the welfare and how this affects the environment and the people responsible for its production. All these processes are aimed at complying with item number twelve of the objectives of sustainable development given by the UN, which is the production and responsible consumption from the awareness of the actions that as a society and as individuals when buying any product, being this made from the sustainable mitigation of damage caused to the environment is guaranteed during social development and also the conservation of resources for future generations, taking into account that there are resources that are limited and essential for our life as humans. This is why in Ecuador, for the last 5 years, a food transformation has been taking place to make these processes sustainable from the trends for the use of food derived from vegetables instead of food from animals as a way to mitigate our footprint on the environment.

2. General Objective

To analyze from a bibliometric and bibliographic perspective, the production of research works on the variable Socially Responsible Education for the consumption of plant-based foods within the framework of the sustainable development goal set by the UN during the period 2016-2021.

Methodology

A quantitative analysis of the information provided by Scopus is performed under a bibliometric approach to the scientific production related to the study of socially responsible education for the consumption of plant-based foods within the framework of the sustainable development objective set by the UN. Also, from a qualitative perspective, examples of some research papers published in the area of the study mentioned above are analyzed from a bibliographic approach to describe the position of different authors on the proposed topic.

The search is performed through the tool provided by Scopus and the parameters referenced in Figure 1 are established.

3.1 Methodological design

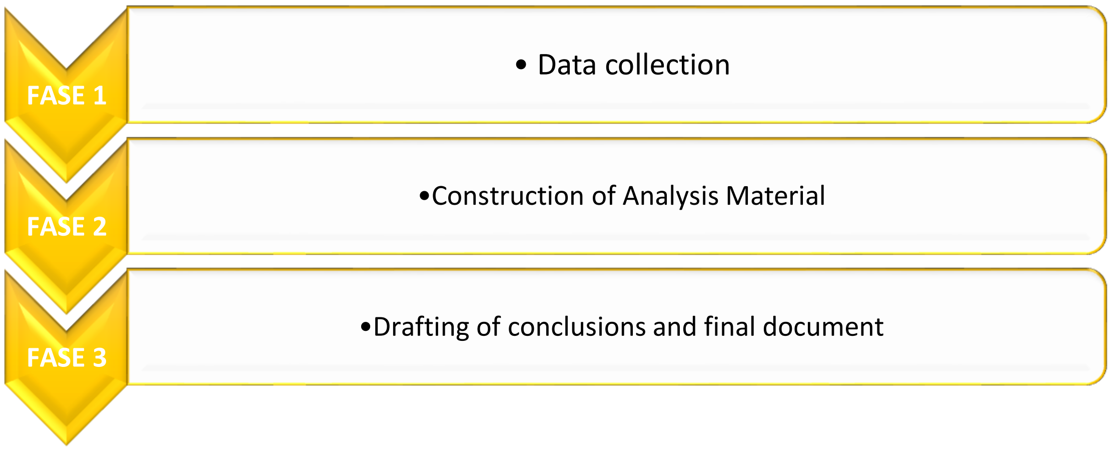

Figure 1. Methodological design

Source: Own elaboration

3.1.1 Phase 1: Data Collection

The data collection was carried out through the Scopus web page search tool, through which a total of 38 publications were identified. For this purpose, search filters were established consisting of:

✓ Published documents whose study variables are related to the study of socially responsible education for the consumption of plant-based foods within the framework of the sustainable development objective set by the United Nations.

- ✓ Limited to Ecuador.
- ✓ Without distinction of area of knowledge.
- ✓ Without distinction of type of publication.

3.1.2 Phase 2: Construction of analysis material

The information identified in the previous phase is organized. The classification will be made employing graphs, figures and tables based on data provided by Scopus.

- ✓ Word Co-occurrence.
- ✓ Year of publication
- ✓ Affiliated institution.
- ✓ Knowledge area.
- ✓ Type of Publication

3.1.3 Phase 3: Drafting conclusions and final document

After the analysis carried out in the previous phase, the study proceeded to the drafting of the conclusions and the preparation of the final document.

4. Results

4.1 Co-occurrence of words

Figure 2 shows the co-occurrence of keywords within the publications identified in the Scopus database.

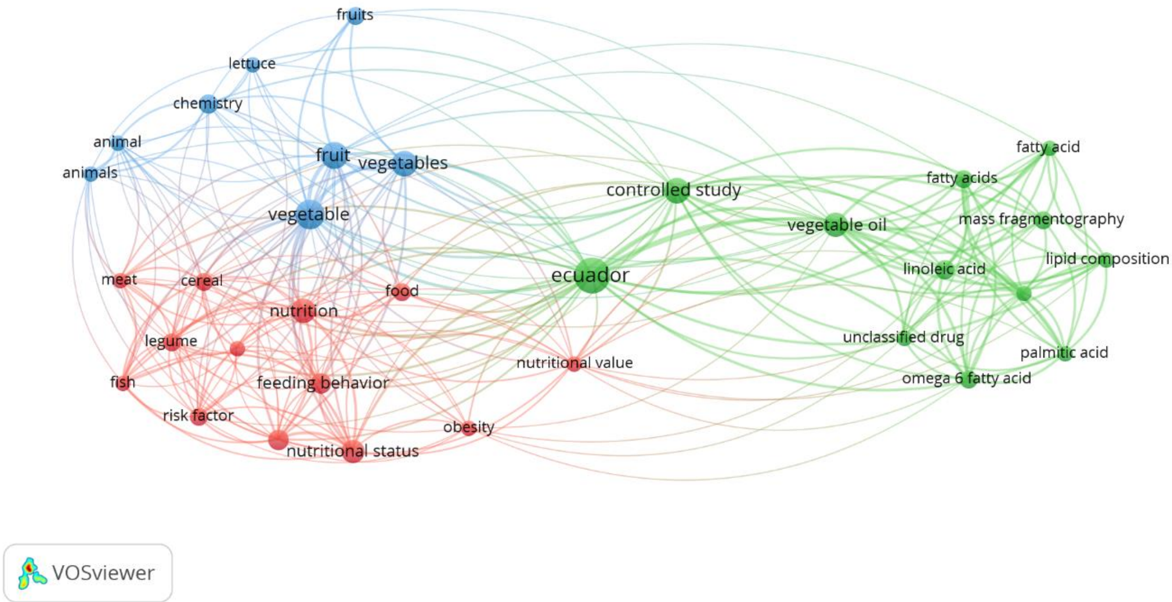

Figure 2. Word co-occurrence

Source: Own elaboration (2022); based on data provided by Scopus.

As shown in Figure 2, the keywords most used in the research related to the variables under study are Ecuador, nutritional value and audited studies as they refer to the population studied which in this case was Ecuador and the studies that were conducted with different sectors of the country on how the transition to food from sustainable development is presented and how this influences the achievements set by the UN for 2030 and how this influences the social development of this country. In the bibliographic references studied, keywords such as fruits, vegetables and food behavior are found, which shed light on the transaction that the food industry is experiencing in Ecuador and the rest of the world, seeking to be in line with social development and the objectives set out for sustainability in these processes, Therefore, in this case, the food industry seeks to offer alternatives aimed at products of vegetable origin which are both healthy and beneficial to the environment as they do not have a great impact on the environment, this change may be possible primarily from education as people are instructed on better lifestyles for both personal and general welfare and the environment in which it operates.

4.2 Distribution of scientific production by year of publication.

Figure 3 shows how the scientific production is distributed according to the year of publication, taking into account the period from 2016 to 2021.

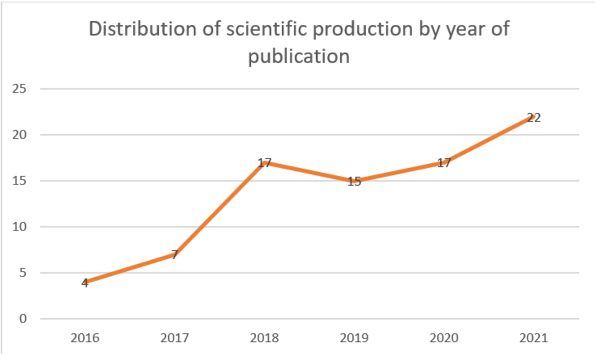

Figure 3. Distribution of scientific production by year of publication.

Source: Own elaboration (2022); based on data provided by Scopus.

2021 is the year with the highest number of publications related to the variables under study, presenting 22 publications, among which is the paper entitled "Dietary practices and lifestyles in the population of Guayaquil during the Covid-19 pandemic", this document has the main objective of determining dietary practices and lifestyles in the population of Guayaquil during the Covid-19 pandemic (Poveda Loor *et al.*, 2021). The main objective of this document is to determine food practices and lifestyles in the population of Guayaquil during the Covid-19 pandemic, taking into account that this pandemic affected both the physical level and the behavioral patterns of people and their habits regarding sleep and food, For this reason, this research was conducted with 527 people from the city of Guayaquil where it was found that in this time in which the quarantine lasted a positive change in the decrease of alcohol and tobacco consumption, however, there was a lifestyle change, especially a reduction in the consumption of healthy foods and physical activity, so it is necessary to promote change in eating behaviors being these increasingly sustainable.

In second place is the year 2020 which presents 17 documents, among which is the title "Characteristics and motivations of consumers of direct purchase channels and perceived barriers to the purchase of alternative foods: a cross-sectional study in the Ecuadorian Andes" (April-Lalonde, *et al.*, 2020). This paper argues that in modern food systems there is equality in access to healthy food because the costs of foods derived from vegetables generally have a higher price, for this reason, the characteristics of agroecological and direct market consumers were analyzed using data from a representative sample of households in Ibarra, Quito and Riobamba, where data from a representative sample of households in Ibarra, Quito and Riobamba were used to analyze the characteristics of agroecological and direct market consumers, Quito and Riobamba where it was identified that one of the main causes for using agroecological consumerism are price and community solidarity with farmers, being this document very important because it identifies public health initiatives that aim to increase nutrition and ecological potential of alternative food systems.

4.3 Distribution of scientific production by affiliated institution

Figure 4 shows how scientific production is distributed according to the affiliated institution of the authors.

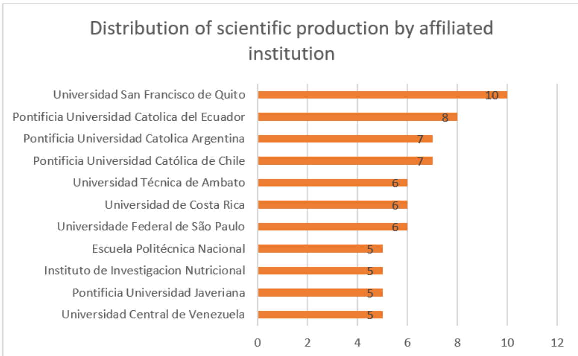

Figure 4. Distribution of scientific production by an affiliated institution

Source: Own elaboration (2022); based on data provided by Scopus.

As shown in Figure 4, the affiliated institution with the highest number of papers registered in Scopus during the period 2016-2021 is the San

Francisco de Quito University with 10 papers, within which is the title “Food insecurity and malnutrition in vulnerable households with children under 5 years of age on the Ecuadorian coast: a post-earthquake analysis” (Herrera-Fontana *et al*., 2020). This document presents as main objective to determine the prevalence of food insecurity, inadequate dietary diversity and poor nutritional status of mothers and children under 5 years of vulnerable families residing in the rural community of La Punta, after the earthquake occurred in Ecuador on April 16, 2016, where it could be evidenced food safety due to lack of resources to acquire healthy food thus causing a predominance of food insecurity, which makes the system present certain limitations when adapting to these circumstances being important to change this system to make it a more sustainable one that can ensure access to quality food necessary for human dignity and general welfare of people. For this reason, in recent years Ecuador has aimed to transform this food system through education and awareness about what is consumed and in what quantities to have a healthy lifestyle and also meet the sustainable development goals set by the UN.

4.4 Distribution of scientific production by area of knowledge

Figure 5 shows how the production of scientific publications is distributed according to the area of knowledge through which the different research methodologies are executed.

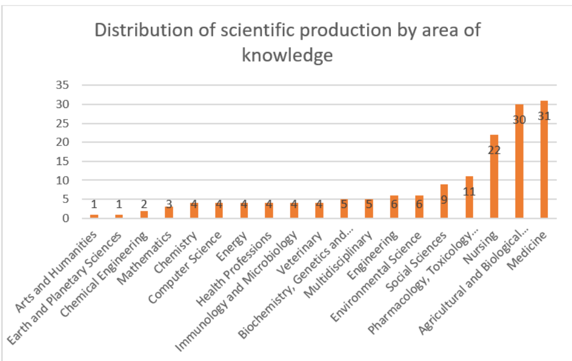

Figure 5- Distribution of scientific production by area of knowledge.

Source: Own elaboration (2022); based on data provided by Scopus.

Medicine was the area of knowledge with the greatest influence at the time of conducting research concerning the study of Socially Responsible Education for the consumption of plant-based foods to the framework of the sustainable development goal set by the UN presenting 31 documents, within which is the paper entitled “Food habits in adolescents in the communities of Valedles Chota. Imbabura-Ecuador, 2019.” (Guerrero *et al*., 2021). This document in the analysis of their research determines the eating habits in adolescents in the communities of the Chota Valley in Ecuador, taking into account that these are repetitive acts learned in l childhood and important for their development and health care. The analysis concluded that adolescents have a high consumption of sugar and sweets (refined carbohydrates) as well as oils, fats, chicken, and dairy products; while the consumption of vegetables is low, which affects the quality of life of children and adolescents, representing a failure to comply with the process requesting reform of the way it is distributed in the food system, thus achieving sustainability in these processes.

In the second place, Agricultural Sciences are where due to the analyzed topic it makes a good approach, within these documents is the paper “Food informatics prediction of the retention time of pesticide residues detected in fruits and vegetables using UHPLC/ESI Q-Orbitrap” (Rojas *et al*., 2021). This document has as its main objective the development of an in sillico model to predict the retention time of a large database composed of pesticides detected in fruits and vegetables for food safety, creating alternatives to help mitigate the collateral damage of this use, so it is sought that these products are harvested in agriculture encouraging local trade and also offer consumers with purchases more options that demonstrate a real awareness of these actions.

4.5 Type of publication

Figure 7 shows how the bibliographic production is distributed according to the type of publication chosen by the authors.

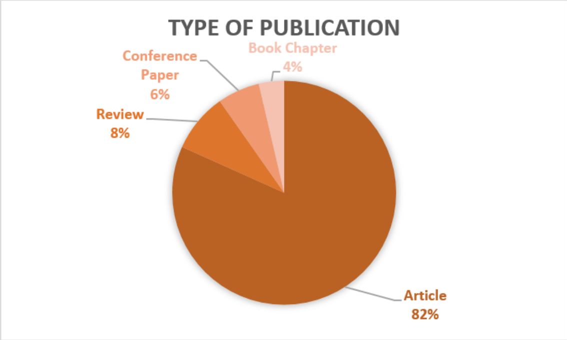

Figure 6. Type of publication

Source: Own elaboration (2022); based on data provided by Scopus.

As shown in Figure 7, within the different types of publications, 84% of the total number of documents identified in Phase 1 of the Methodological Design correspond to journal articles, among which is the one entitled "Value chain in the tree tomato (Solanum betaceum) network in Ecuador" (Moreno-Miranda *et al.*). The objective of this study was to analyze descriptively the structure of the tree tomato agro-food network where the main social and productive characteristics, horizontal and vertical dimensioning; and the proposal of strategies focused on improving its productive performance, taking into account that both the company and the country need to make certain changes to comply with the sustainable development objectives set by the ONY that will help to improve food security in Latin America.

In second place are the reviews which represent 8% of the total number of documents registered in this study, among which is the title "Valorization of tropical fruit by-products: A review, Part 2: Applications, economic and environmental aspects of biorefinery through supercritical fluid extraction" (Villacís-Chiriboga et al., 20). This document is given thanks to the fact that the world trade of tropical fruits is only expected to increase significantly in the coming years due to changes in the food systems of Latin American countries presenting the concepts of a biorefinery of tropical fruits using supercritical CO_2 extraction and the potential applications of the isolated fractions, so it is necessary to regulate these processes for better economic and environmental performance.

5. Conclusions

Thanks to the bibliometric analysis carried out in this article, it is possible to determine that the main characteristics in the volume of scientific production related to the study of socially responsible education for the consumption of plant-based foods within the framework of the sustainable development goal set by the UN, there is a good flow of research, especially in Latin American countries, more specifically in Ecuador where some entities stood out for the amount of publication of bibliographic records, so it is established that Universidad San Francisco de Quito, was the country with the highest number of reports through its institutions to Scopus with a total of 10 documents registered during the period 2016-2021.

Due to the nature of the study, which seeks to Determine the Prevalence and incidence, it is established that Medicine was the area of knowledge with the greatest influence in the research identified, since 211 of the 225 publications related to the present analysis, actively participate with theories framed in that area of knowledge. Similarly, and following the nature of the study and the educational component, biochemistry also played a fundamental role in the execution of 31 publications. It is worth noting that within the analysis presented regarding the position of different authors for the study of the topic proposed in this research, it can be concluded that there is a need to determine new action plans to encourage responsible consumption by promoting the intake of plant-based foods to contribute to the transition of our system to a sustainable one to have the endorsement of the UN and continue working to achieve sustainability in food processes to mitigate inequality gaps observed in the exercise of these analyses so that it can be seen, Therefore, it is important to increase the number of cases related to the variables under study to have more knowledge about the plans that are proposed in Ecuador to improve the goals to the objectives set to achieve sustainability and food security

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